CHAPTER 9: NON-POINT POLLUTION PREVENTION AND CONTROL PROGRAMS

Under the Clean Water Act, Federal and State regulations have required cities to examine non-point pollution and reduce the amount that enters local waterways. Traditionally, stormwater management programs have focused on preventing flooding and maintaining the drainage infrastructure to protect life and property. More recently, stormwater programs have also sought to protect the environment from harm caused by stormwater runoff by reducing pollutants in stormwater runoff and improving habitat.

This chapter describes the various non-point pollution prevention programs operating in the Thornton Creek watershed. It begins with a description of sources of non-point pollution in this watershed. Then it describes regulatory programs that impact non-point pollution, such as the National Pollutant Discharge Elimination System permits. This is followed by a description of citizen-oriented pollution prevention programs, business programs, and government maintenance programs. The final section assesses the success of these programs. Chapter 8 dealt with the quantity side of stormwater and does include some pollution control associated with conveyance and flood control.

Also, see Chapter 6 for a discussion of regulations and policies that protect water quality. The laws previously discussed that are most relevant are the Federal Clean Water Act and Seattle's Stormwater, Grading, and Drainage Control Code.

The non-point pollution problem is sometimes compared to snow. No individual snowflake weighs very much, yet snow piled deep enough can cause a roof to cave in. Similarly, any individual source of non-point pollution, a drop of oil or a cigarette butt, may seem inconsequential. But, when such pollution is multiplied by the thousands, natural resources may be irrevocably damaged.

9.1 Sources of Non-point Pollution

In the Thornton Creek watershed there are many sources of non-point pollution. The most problematic is urban runoff that carries pollutants from roads, buildings, parking lots, parks, and other areas. Storm flows also can increase turbidity and sediment loads, which damage habitat. Stormwater enters Thornton Creek with almost no water quality treatment, although a minimal amount of treatment is provided by grassy ditches or catch basins.

Although stormwater is the biggest problem, erosion and illegal discharges (such as spills, inappropriate practices, and deliberate dumping down a storm drain) contribute to the problem. Due to the urban character and small size of the watershed, agriculture, forestry, mining, boats, and marinas do not contribute to non-point pollution problems in the Thornton Creek watershed.

No industrial discharges, such as sewage treatment plants or pulp and paper mills, are located within the watershed, although there is a sewage pump station located at Sand Point Way NE and NE 93rd. Pollutants in urban stormwater runoff come from a wide variety of sources. Non-point sources include contributions from animals (wild and domestic), decomposed plants, natural minerals, and human sources such as motor vehicles, residential land uses, illegal dumping, commercial, industrial, and construction activities. (See Chapter 5 for water quality assessment.) Major sources of non-point pollution can generally be categorized as follows:

Street and Parking Lot Deposition. In urban areas, street and parking lot deposition frequently is a major source and collector of urban runoff pollution. Such deposited materials may include street dirt and litter. Pollutants frequently bind to dirt particles. Street dirt may arise from traffic, road deterioration, vegetative residue, and decomposed litter. Litter includes cans, glass, paper, cigarette butts, and garbage. Vegetation, animal excrement, dead animals, automotive fluids, and spilled or improper disposal of solid and liquid wastes generated from household or commercial activities onto the streets are picked up when it rains and contribute to polluted or contaminated runoff.

Vehicles. Internal combustion engine exhaust emits primarily dust-sized particles containing hydrocarbons. Many other pollutants are deposited into the environment by automobiles and trucks. Fluids such as oil and antifreeze leak onto roadways, worn metals and brake pads deposit toxic mineral dusts onto roads, tires wear and deposit rubber particles, poorly maintained vehicles drip oils and other automotive fluids onto street surfaces, and various solids and fluids are rinsed from vehicles and the loads they transport. These fluids and solids are rinsed from roadways and other impervious areas when precipitation falls, which results in polluted creeks and tributaries. Residential car washing also contributes soap and other chemicals to the storm system and Thornton Creek.

Landscape Maintenance. In urban areas, vegetative inputs exceed their undeveloped counterparts. Trees and the associated leaf-fall contribute organic residues that are high in nutrients. Such inputs occur primarily in autumn. Improper yard waste disposal, such as dumping lawn clippings into ditches or over ravines, can cause nutrient problems in the stream. Landscaping practices, such as the use and overuse of fertilizers, herbicides, and pesticides, can also result in pollution of stormwater and Thornton Creek.

Construction/Erosion. Erosion of exposed soils during clearing and construction activities contributes significantly to the sediment content of urban runoff, especially when erosion controls are not properly used. Improperly planned landscaping projects can leave bare soils subject to erosion. This is especially true during the rainy season, October to May. In some areas of the Thornton Creek watershed, erosion occurs in steep ravines where uncontrolled runoff can cause soil loss and side slope instability.

Excessive Storm Flows. High levels of impervious surface contribute to high storm flows in the stream. Streambanks and beds and ditches also erode due to increased stream velocities during periods of heavy rainfall. Turbidity and sediment problems are caused.

Uncovered Outdoor Material Storage. Materials such as oily parts, old cars and engines, messy or leaking dumpsters, storage drums, and soil and compost stockpiles can come into contact with stormwater. When it rains, the pollutants are washed off the surface of these objects and are carried into the storm system and Thornton Creek.

Illicit Discharges. Materials are illicitly discharged into the storm system with varying intentions from accidental or ignorant to deliberate. These discharge points include indoor drains improperly connected to the storm sewer system; and pressure washing and steam cleaning

wash water, improper disposal of automotive fluids, building materials and paint, spills, and other illegal discharges into storm drains, ditches, and Thornton Creek.

Sewage. Fecal coliform bacteria are found in sewage, as well as excrement from other warm bodied animals. Infiltration of seepage from municipal sanitary sewers to the storm drain system could be a source of bacterial contaminants to stormwater discharges. However, infiltration from the sewer into the storm drain systems is of low concern in Seattle. Seattle's sewer system dates back to the 1890s and is constructed quite deep. The sewer pipes convey sewage to the West Point Sewage Treatment Plant. The storm drains were constructed after the mid-1970s and are relatively shallow, so seepage up from the sewers into the storm drains is unlikely. New sewer and storm drain connections to city lines require a permit and inspection. There is little opportunity for cross connection and very few are found in Seattle.

There are a few septic systems in the Thornton Creek watershed. Four septic systems are located in Seattle and an unknown number are located in Shoreline. Although septic systems built after the 1970s are mapped, older systems may not be mapped. Without proper maintenance, septic systems can fail and leach pollutants into groundwater and eventually the creek.

There are no combined sewer overflow (CSO) outfalls to Thornton Creek. CSO outfalls are situated in areas where stormwater and sewage are conveyed in the same set of pipes. In the Thornton Creek watershed, stormwater primarily flows overland through ditches or through separated storm sewers, although some roof drains are connected to the sanitary sewer.

On rare occasions, the sanitary sewers can overflow. This may occur due to a blockage in the sewer line. City or County crews respond immediately to unplug the blocked sewer line and clean up any sewage. It is also possible for sewer lines to fill beyond capacity and cause multiple overflows. This occurred during the 1997 holiday storm. A snowstorm followed by warming temperatures and rain caused excessive runoff from roof drains to enter the sanitary sewer caused it to overflow in multiple locations.

9.2 Comprehensive Government Non-point Pollution Programs

Under the Federal Water Pollution Control Act, Ecology administers the State's National Pollution Discharge Elimination System (NPDES) permits. Under NPDES there are programs to deal with point sources (sewage treatment plants), urban runoff (from cities/counties with populations over 100,000), construction runoff (for sites greater than five acres), and industrial runoff (from select industries such as auto recyclers). Businesses and government agencies that meet certain conditions are required to submit applications for NPDES permits.

Ecology's Comprehensive Non-point Pollution Programs

This is a summary from Section 6.3. The Washington State Department of Ecology (Ecology) is designated as the State's water pollution control agency for all purposes of the Federal Clean Water Act. Ecology has been granted jurisdiction to control and prevent the pollution of streams, lakes, rivers, and other surface and underground waters within the State. Ecology has developed a plan that designates the beneficial uses of all water bodies in Washington. Ecology has established instream water quality standards for freshwater streams that are consistent with the beneficial uses (WAC 173.201).

Under the Washington Pollution Control Act, Ecology administers the State's NPDES permits. Under the NPDES there are programs to deal with point sources (sewage treatment plants), urban runoff, construction runoff, and industrial runoff. Businesses and government agencies that meet certain conditions are required to submit applications for NPDES permits. Ecology

has approved stormwater permits for Seattle, Tacoma, King County, Pierce County, Snohomish County, Clark County, and Washington State Department of Transportation.

Seattle's Stormwater Management Program

In 1995, Seattle obtained from Ecology a combined State Waste Discharge and NPDES permit authorizing discharges of stormwater from its separate storm sewer system. This permit required that the City develop a comprehensive Stormwater Management Program (SWMP), which was submitted to and approved by Ecology in 1997. Seattle must submit an annual report to Ecology, and reapply for a permit every five years. The goals of Seattle's SWMP are to: minimize risks associated with flooding, minimize erosion and sedimentation, and minimize environmental degradation.

The contents of the SWMP are summarized below.

- A prioritized list of Seattle water bodies. Thornton Creek ranked high, along with other urban creeks.
- A summary of citywide problems, which included high volumes of stormwater, excess peak flows, and water quality and groundwater concerns.
- A list of specific problems for each water body. The following problems were considered high priorities in Thornton Creek: excess bacterial contamination in the water column, excess sedimentation in the streambed, degraded aquatic and riparian habitat, limited benthic community, shortfalls in public education, shortfalls in enforcement of regulations, and floatable and shoreline debris. The SWMP concluded that the following items were lower priority problems in Thornton Creek: excess nutrients in the water column, low dissolved oxygen in the water column, and heavy metals. The SWMP did not consider contaminated sediment or groundwater to be problems of concern. However, subsequent studies have shown that sediments are contaminated (see Section 5.4) and temperature and dissolved oxygen levels may not support salmonid requirements (see Section 5.2).
- A summary of citywide programs including: development regulations, water quality related CIP projects, road maintenance, drainage maintenance, education, and source control programs. These programs are also described in this document and address regulatory issues (Chapter 6), water quality (this chapter), public involvement (Chapter 11), drainage operation and maintenance (Chapter 8), drainage CIPs (Chapter 8), and toxic control (this chapter).
- A list of identified unmet needs such as evaluation of erosion control Best Management Practices (BMPs), ongoing business inspection program, private detention system inspections, creek restoration program, inspector training, and review of enforcement procedures.
- A fiscal analysis. Expedited to implement the above tasks.

Seattle's Development Requirements and BMP Manuals. For new development, the City of Seattle requires use of stormwater management BMPs, including pollution control techniques that reduce pollution at the source rather than at the end of the pipe. Seattle currently has two BMP manuals giving approved methods for meeting specific stormwater requirements: Construction Best Management Practices Manual (1994), which describes methods to control erosion and sedimentation; and a Source Control Manual for urban land use practices (1989).

As a condition of the City's NPDES municipal stormwater permit, Seattle is currently revising the Stormwater, Grading and Drainage Control Code to increase stormwater requirements for new

development. To support these changes in the Municipal Code, Seattle is developing a total of four BMP manuals, which are expected to be adopted by joint Directors' Rules by July 2000. These manuals will include:

- Flow Control—reducing the peak runoff rate during high storms through infiltration or detention.
- Treatment—removing pollutants from stormwater through devices such as oil and water separators.
- Construction—reducing erosion and sedimentation during construction.
- Source Control—preventing stormwater from being contaminated by pollutants through housekeeping practices, storage, material handling, spill response, landscaping, and pollution reduction structures.

Washington Department of Transportation (WSDOT)

WSDOT projects and operations are affected by provisions of the NPDES. For example, WSDOT is mandated to construct stormwater quantity and quality BMPs in conjunction with projects that add more than 5,000 square feet of impervious surface.

Erosion and Sediment Control Permits. Using the WSDOT Highway Runoff Manual as guidance, a Temporary Erosion and Sediment Control Plan (TESC) is prepared for all WSDOT construction projects that involve any amount of earthwork. Earthwork includes excavation, clearing, grubbing, trenching, or any activity that exposes bare soil to precipitation and/or wind. When more than 5,000 square feet of impervious surface are being added, the TESC is incorporated into the Stormwater Site Plan. When less than 5,000 square feet of impervious surface is being added, the TESC is prepared as a stand-alone. Construction projects that disturb five or more acres of land require WSDOT and other developers to file a NPDES Notice of Intent for coverage under the NPDES Baseline General Permit for Construction Activities.

Local and State Regulations. In addition to the NPDES permit requirements, WSDOT construction projects come under the jurisdiction of numerous State and local government regulations, which may require stormwater BMPs or extraordinary levels of erosion and sediment controls. These include local grading permits, Right-of-Way Management Sensitive Area Ordinance, Shoreline Management Substantial Development Permit, Ecology Water Quality Certification, Ecology Temporary Modification of Water Quality Standards, Department of Fish and Wildlife Hydraulic Project Approvals, and Endangered Species Act requirements.

9.3 Citizen-oriented Non-point Pollution Prevention Programs

Many programs and campaigns aim to reduce non-point pollution in the greater Seattle area. The programs focus on changing citizens' everyday behaviors and improving City maintenance practices. Seattle and Shoreline offer citywide programs and activities designed for different people based on age and/or geographical location. Programs dealing with lawn and gardens, household hazardous waste, automobiles, and other activities are described below.

Lawn and Garden Programs

Natural Lawn Care. Seattle and suburban cities promote resource-efficient and less toxic methods of maintaining healthy turf. The messages include ways to use less water, pesticides, and other chemicals. This program has relied on direct mailing, radio ads, bill inserts, and demonstration sites to get the message out.

Green Gardening Program. Sponsored by Seattle, King County, and Washington State University (WSU), Green Gardening educates the public about practices to reduce chemical use, toxic runoff, and water use. By teaching Green Gardening principles to professional groundskeepers, Master Gardeners, horticulture students, and garden shop employees who can share this information with the public, this program has a broad and lasting citywide reach. Following are examples of projects conducted in 1998:

- Developed curriculum and trained staff at nine local garden centers and horticulture students at three colleges about less-toxic pest control methods, to help them educate their own customers.
- Made Green Gardening presentations to 34 groups in King County.
- Taught a Green Gardening curriculum as part of the regional WSU Extension Master Gardener program and presented it to 135 Master Gardeners.
- Presented a one-day training for professional groundskeepers on successful integrated pest management (IPM) strategies, which attracted public agencies and private landscaping companies.
- Designed, produced, and distributed fact sheets and brochures for residential and professional use.

Seattle Tilth. The non-profit Seattle Tilth Association contributes to decreasing non-point pollution through its composting and organic gardening programs. Tilth teaches and encourages Seattle citizens to compost yard and kitchen wastes, reduce or cease use of pesticides and fertilizers, and discover the benefits of organic gardening. Using these methods, people can greatly reduce their household contributions to non-point pollution by keeping pesticides, fertilizers, and organic debris out of stormwater and creeks. See Section 7.1 for more information.

Household Hazardous Waste

Household Hazardous Waste Drop-Off. Local government provides watershed residents appropriate ways to dispose of household hazardous wastes. In Seattle, residents make appointments to deliver household hazardous wastes by calling (206) 296-4692. The Seattle North Haz Shed is located on N 130th St and Ashworth Ave N. Seattle's two Household Hazardous Waste (HHW) collection facilities are among the longest operating in the nation. In 1998, these facilities served more than 13,000 households and collected 435 tons of materials for proper disposal. Collecting these materials keeps them out of the storm drains and serves to educate the public about the impacts on water quality. Educational displays and brochures are available at the collection sites, and facility staff interact with citizens on-site and at public events. Local governments do not charge a fee at the collection sites, because they want to encourage people to bring in their hazardous wastes rather than pollute the environment. The program is paid for through garbage and sewer bills.

Green Cleaning and Green Cleaning Kits. Through special promotions and programs, Seattle distributes "Green Cleaning Kits" containing lower toxicity cleaning products, such as baking soda and vinegar, and simple recipes for common household cleaning jobs. The kits are distributed selectively through the Household Hazardous Waste Department to enhance promotions geared towards reducing toxic and hazardous substances in the home. Tips for green cleaning are included in citywide mailings, such as Seattle's Curb Waste Times.

Master Home Environmentalists. The Washington Toxics Coalition offers "healthy homes" analysis to interested area residents. The program focuses on reducing use of household hazardous materials. Contact the Washington Toxics Coalition at (206) 632-1545.

Automotive Maintenance

Green Car Wash Program. Shoreline and Seattle help fund-raising groups to host car washes that don't send soapy water to the nearest stream. Shoreline and Seattle will provide groups with a kit to block a storm drain inlet and pump the soapy water to an appropriate location, usually the sewer. There is no charge to borrow the car wash kits. Contact Seattle Public Utilities (SPU) at (206) 684-7587.

Other Citizen-oriented Programs

Water Quality Investigations. Both Shoreline and Seattle rely on citizens to spot and report potential surface water problems. The City's field investigators respond to water quality-related complaints from citizens (through a special, dedicated telephone line), and from other departments and agencies. Citizens who spot surface water quality violations, illegal dumping or graffiti problems can report them directly to SPU by calling (206) 684-7587 and to Shoreline by calling (206) 546-1700.

City investigators attempt to determine the responsible party and facilitate corrective action on the part of the polluter. The City coordinates with Ecology on potential water quality violations. City investigators provide information on disposal options, erosion control, and BMPs, and frequently send follow-up letters containing additional information to the responsible party. If practical, the responsible party is required to clean up the materials. When needed, other city departments will assist in cleanup such as street sweeping and catch basin pump out.

Adopt-a-Street (SPU). Adopt-a-Street is a partnership between the City of Seattle and its residents. Groups or individuals agree to adopt a mile or more of City streets, keeping them clean and reducing non-point pollution. The City provides organizational help, cleanup supplies, free hauling, and street signs that announce the Adopt-a-Street sponsors. The Adopt-A-Street program is one of a handful of community programs that make up the Environmental Partnerships team. Contact Adopt-a-Street, (206) 684-7647.

Septic System Management. Failing septic systems can be a significant source of non-point pollution. Septic system owners are responsible for maintaining their systems. To prevent failure and maximize the useful life of a septic system, the King County Health Department recommends:

- Inspect the septic tank once every year and pump as necessary.
- Avoid flushing harmful material into the septic tank, such as grease, paper, cigarettes, coffee grounds, sanitary napkins, solvents, oils, paint, caustic chemicals, or pesticides.
- Avoid the use of any type of chemical or biological septic tank additive.
- Use water wisely. Minimize operating the system above its "daily designed flow." Use low flow fixtures on faucets, showerheads, and toilets.
- Limit garbage disposal use. Frequent garbage disposal use significantly increases the build-up of solids in septic systems, leading to failure.
- Don't construct patios, carports, or decks or use landscaping plastic over the drainfield or septic tank. The system must be accessible and requires air to function properly.

- Keep all vehicles off the septic tank and drainfield areas. Vehicular traffic damages drainfields, crushing pipes, collapsing systems, and compacting soils.
- Direct water from roof drains and surface drainage away from the drainfield and septic tank. Additional water overloads the drainfield, leading to system failure.
- Keep a detailed record of all maintenance activities.

Neighbor Referrals. Two community groups, the Thornton Creek Alliance and the Thornton Creek Project, receive many calls from citizens concerned about the creek. These organizations offer advice and refer callers to the appropriate response agency.

Pet Waste Scoop Law and Leash Law (City of Seattle). The City of Seattle passed a "Scoop Law" in 1982 to reduce the thousands of pounds of animal feces deposited in public areas each year and decrease the spread of bacteria carried in the feces. The Scoop Law states that it is unlawful for a pet owner to:

- Allow the accumulation of cat or dog feces in any open area of his/her property wherein dogs/cats are kept and fail to remove or dispose of feces at least once every 24 hours.
- Fail to remove the fecal matter deposited by his/her animal on public property before the owner leaves the immediate area.

Seattle has a leash law to further regulate pets for the safety and health of its citizens. The law states that it is unlawful for any owner of a domestic animal, except cats and pigeons, to allow it to run at large, but that pets may be removed from the premises of the owner if restrained by a leash that is eight feet or shorter, and if in physical control of a person.

Storm Drain Stenciling. In the Storm Drain Stenciling Program, Seattle and Shoreline provide supplies to community groups to stencil a message above storm drains that reads: "Dump No Waste, Drains to Stream." Storm Drain Stenciling is administered through the Adopt-a-Street Program, Salmon in the Classroom, and various community groups. Salmon in the Classroom students have begun stenciling in several foreign languages in addition to English.

9.4 Business Non-point Pollution Prevention Programs

Business programs are intended to improve water quality by reducing pollutants at their source. Source control efforts include construction site inspection, business inspections, and inspection for and response to illicit discharges. This section describes recognition/support programs and inspection/enforcement programs.

Recognition/Support Programs

EnviroStars. EnviroStars is a business-oriented component of the Local Hazardous Waste Management Program, a cooperative effort between King County and the City of Seattle. After enrolling in the EnviroStars program, participating businesses are given a two-to-five star rating based on their demonstrated commitment to reducing hazardous waste. The higher the star rating, the more proactive the business has been and the more recognition they receive. Consumers who want to shop at environmentally responsible businesses can look for the EnviroStars decal in store windows and reception areas. Businesses with three stars or more are featured in success stories sent to local media, highlighted in radio and print advertisements, and nominated for environmental awards. Contact the Local Hazardous Waste Management Program, King County, (206) 263-3051.

IMEX. The Industrial Materials Exchange (IMEX) is a free service designed to match businesses that produce wastes, industrial by-products, or surplus materials with businesses

that need them. IMEX helps businesses to find markets for their industrial by-products, surplus materials, and wastes. Through IMEX, waste generators can be matched with waste users. The goal of IMEX is to conserve energy, resources, and landfill space by helping businesses and organizations find alternatives to the disposal of valuable materials or wastes. Contact the Local Hazardous Waste Management Program, King County, (206) 296-4899, imex@metrokc.gov.

WIN. The Waste Information Network (WIN) helps small businesses meet their environmental responsibilities while meeting their bottom line. The focus of WIN revolves around local hazardous waste and pollution prevention issues faced by small business. WIN includes over 700 members from local businesses, public agencies, trade associations, environmental groups and others involved in resolving waste management concerns. Members come from throughout Puget Sound and attend quarterly meetings, receive Network News, and hold the annual WIN Environmental Achievement Awards. WIN is a component of the Local Hazardous Waste Management Program, King County. For information contact the Business Waste Line, (206) 296-3976.

Inspection Programs

Seattle Business Inspections. Seattle's Business Inspection program is intended to reduce potential sources of water pollution by encouraging the use of good housekeeping and other BMPs. This program focuses on the areas that drain to the Duwamish, Elliott Bay, Lake Washington Ship Canal, and Thornton Creek.

The City focuses on the businesses most likely to impact water quality if BMPs are not followed. High priority businesses include sand and gravel yards, foundries, car wash establishments, auto repair shops, and veterinary clinics (for pet waste control). City personnel use Standard Industrial Classification (SIC) codes to identify businesses that have a high potential to pollute stormwater.

In an initial assessment, City personnel drive by the businesses to determine which ones actually perform high risk activities. City personnel subsequently visit these businesses and conduct an on-site inspection to identify potential stormwater pollutant sources. Historically, very few businesses refuse the inspection. All businesses receive a follow-up letter. Inspectors work with the business owners, recommending BMPs and developing effective solutions to any problems encountered. Sometimes the solution is as simple as sweeping more frequently to keep materials out of stormwater runoff. If polluted runoff from a business is routed to a separated sewer system, the business is informed that it is in violation of City code and may be subject to a fine.

Inspections in Thornton Creek Watershed. The City inspectors are currently working in the Thornton Creek watershed. Staff identified over 700 of the 2,300 businesses in the watershed that have a high potential to pollute stormwater. They completed 740 preliminary business inspections, and sent 130 letters to the businesses selected for on-site inspections during the preliminary inspections. In 1999-2000, 140 on-site inspections are scheduled.

In May 1997, the water quality team conducted a "car wash sweep" in the Lake City area to address numerous complaints about soap suds in Thornton Creek. Lake City has many new and used car lots, automotive repair facilities, car washes, and fleet operators. City staff contacted more than 42 facilities regarding car wash practices.

Construction/Erosion. At construction sites, building inspectors inspect and enforce the erosion and sedimentation control requirements, and evaluate the effectiveness of BMPs. In Seattle, three inspectors are assigned specifically to projects occurring in environmentally critical areas (ECAs). If a project is located in a critical area, the contractor is required to attend a preconstruction conference with the inspector to discuss the project's plans for erosion and

sedimentation control and for BMPs. The Stormwater, Grading, and Drainage Code is enforceable by civil penalties for violations and by liens to recover costs if the City performs necessary work

9.5 Government Maintenance Non-point Pollution Prevention Programs

Seattle, Shoreline, King County, and WSDOT have instituted a number of maintenance programs to reduce the amount of pollution that enters streams and waterways. Several are described below in this section.

Drainage Maintenance

Catch Basin/Sand Box Maintenance. Seattle, Shoreline, and WSDOT have programs to routinely maintain these drainage system components. In Seattle, catch basins are inspected annually and cleaned as needed. In a given year, approximately one-third of the catch basins are cleaned. See Section 8.3, for more details.

Private Detention System Inspections. Seattle and Shoreline routinely inspect private detention systems to ensure they are maintained. Although these systems primarily are designed to detain stormwater, they also capture litter and sediments. (See Chapter 8.)

Detention Ponds and Maintenance. In addition to flood control, detention ponds provide some water quality improvements. Detention ponds store water and allow sediments and their associated pollutants to settle out of the water column. Vegetation in the ponds may absorb pollution as well. Debris often collects in ponds and is removed. Routine maintenance activities remove litter and accumulated sediments. (See Chapter 8.)

Street Maintenance

Street Sweeping. In Seattle, the Seattle Transportation Department (SeaTran) conducts the street sweeping program. Major public streets and roads are swept on a regular schedule; industrial and commercial areas are swept on a rotating basis; and bike paths are cleaned monthly. Two sweeper trucks operate in the north half of Seattle. Generally the trucks clean arterial roads, although they will respond to cleanup requests on residential streets. In addition to scheduled sweeping, additional efforts are made after a very large snowstorm (to remove sand) and special events such as parades.

Spill Response. Local government staff respond to spills on the roadway. Staff will contain and clean up spilled material and appropriately dispose of the material.

Grounds Maintenance

City of Seattle Pesticide Reduction Strategy. The City of Seattle adopted a new pesticide strategy in October 1999 to be implemented by the Office of Environmental Management. This program seeks to eliminate the City's use of the most hazardous herbicides and insecticides by June 2000; and reduce overall pesticide use by 30% by December 2002. For further information contact the Office of Environmental Management Department, (206) 386-4595, or the City of Seattle Public Access Network at www.ci.seattle.wa.us/oem. The program has developed this strategy:

- Research and pilot-test alternative IPM strategies.
- Evaluate broader application of current IPM techniques.
- Develop alternative maintenance standard test sites to get public input.

- Develop IPM strategies for achieving 30% reduction from present levels.

Grounds Management Task Force (Seattle). Seattle has established a Grounds Management Task Force (GMTF), including representatives from SPU, Parks, SeaTran, Office of Environmental Management (OEM), Seattle Center, and City Light to accomplish the following:

- Provide a forum for City departments to share information on BMPs.
- Assist City departments to balance environmental stewardship, aesthetic goals, and maintenance issues.
- Promote management and maintenance practices that enhance natural ecosystems.
- Improve and implement inter-departmental approaches to shared environmental issues such as compost management and training.
- Promote integration of Landscape and Grounds Management Guidelines into planning, construction, and maintenance of City landscapes and grounds.
- Assist the OEM in implementing the following Environmental Management Program (EMP) Landscape and Grounds Management Policy elements:
- Maximize water use efficiency.
- Practice integrated pest management.
- Reduce and reuse landscape waste.
- Select and use fertilizers that minimize negative impacts.
- Design landscaped areas to suit site conditions.
- Restore, create, and protect environmentally valuable areas.

King County Golf Course BMPs. In 1993 the King County Environmental Division completed a manual for suggested maintenance practices at golf courses in King County. Best Management Practices for Golf Courses: Development and Operation details ecologically and environmentally sensitive methods for established and new golf courses, based on the best available science of the day. The manual will be updated regularly to reflect and incorporate new information.

Primary issues addressed within the manual include:

- Land use planning
- Wildlife habitat
- Water consumption and conservation
- Hydrology and water quantity control
- Geology and groundwater
- Turf grass maintenance and operation
- Water quality and management chemical selection

Other

Septic System Maintenance. The Seattle-King County Health Department oversees the maintenance of an estimated 100,000 septic systems in King County. Seattle has developed a

special program for the 200 septic systems located in the City limits, four of which are in the Thornton Creek watershed. Seattle systems are documented on the Geographic Information System (GIS) and inspected annually. Owners of failing systems are required to make corrections. There are an unidentified number of septic systems in Shoreline. Although the County inspects and records new septic systems, records for older systems are difficult to locate. The Shoreline septic systems receive the routine services provided for the entire county. The Health Department provides countywide information about septic maintenance, but does not conduct an inspection program.

WSDOT Erosion and Sediment Control Permits. Using the WSDOT Highway Runoff Manual (HRM) as guidance, a Temporary Erosion and Sediment Control Plan is prepared for all WSDOT construction projects that involve any amount of earthwork. Earthwork includes excavation, clearing, grubbing, trenching, or any activity that exposes bare soil to precipitation and/or wind. Construction projects that disturb five or more acres of land require WSDOT to file a NPDES Notice of Intent for coverage under the NPDES Baseline General Permit for Construction Activities.

Metro North Bus Base, Shoreline (King County). Metro North Base bus facility in Shoreline, completed in 1990, was designed to meet and exceed current standards for stormwater and non-point pollution control as outlined by King County. Several key technologies are employed at the facility to control non-point pollution. Parking lots and impervious surfaces are graded away from the creek. All repairs and cleanings are performed indoors in double-wall, electronically monitored and controlled facilities. Oils, antifreeze, lubricants, and other vehicle and engine fluids are pumped directly into underground tanks that are later removed in trucks and taken to treatment facilities. A spill cart equipped with the latest spill control technologies is nearby at all times for emergencies to ensure that contaminants do not reach stormwater systems or the creek. The facility is monitored and reviewed on a regular schedule for State and County permit compliance by Ecology.

9.6 Research and Monitoring

Chapter 5 includes an assessment of the available Thornton Creek water quality data. Water quality sampling that takes place in the watershed includes:

- Monthly grab samples of water from the mouth of Thornton Creek (King County).
- Annual benthic samples from various sites within the creek (SPU).
- Annual sediment sample from the mouth of Thornton Creek (King County).
- Sediment samples analyzed for pesticides, PCBs metals (USGS).
- Water quality and benthic samples analyzed by local schools.

Seattle has focused its research efforts on evaluating structural BMPs to treat stormwater runoff. The intent is to determine which products work best under various scenarios (high volume, low flow, intermittent dry periods). The BMPs include oil and water separators, swirl technologies (using centrifugal forces to settle out solids and float debris), swales, wetlands, and others. The BMP sites are located throughout the city and include BMP devices at:

- North Seattle Community College – oil and water separator, wetland.
- Meadowbrook Pond – detention pond, aeration.
- I-5 at Northgate Mall (WSDOT project with SPU support).
- 1st Ave S Bridge.

- Westlake Ave (proposed).
- I-5 near Lake Union (proposed project by WSDOT with SPU support).
- I-5 near Ronald Bog (proposed project by WSDOT and Shoreline) – swale.

The results of these and other studies will help SPU, Shoreline, and WSDOT select and install effective devices in the watershed to treat urban runoff.

9.7 Non-point Pollution Program Assessment

Government agencies and non-profit groups have many strong programs designed to reduced non-point pollution and improve water quality. Because non-point sources are so numerous, multiple strategies are needed to address them. Regulations, enforcement, government operations, and business operations are part of the solution. Reducing non-point pollution is especially challenging because it requires individuals to change their behavior. It is the opinion of the Watershed Management Committee that there is not enough funding, nor staff, for non-point pollution reduction and control because they believe regulatory agencies and citizens don't value it.. The Committee has identified the following areas for continued attention.

Regulation

- Continue to improve stormwater management programs in accordance with Ecology requirements.
- Determine if faulty sewer connections may be contributing to high fecal coliform levels.

Citizen Programs

- Educate citizens about non-point pollution and their role in preventing it.
- Develop a watershed-specific program, rather than relying on regional programs to address non-point pollution in the Thornton Creek watershed.
- Continue to promote alternative modes of transportation, including public transit, walking, and biking.

Business Programs

- Conduct the proposed business inspection program.
- Develop a program to address pollutant discharge from mobile businesses.

Government Maintenance

- Reduce use of pesticides and improve grounds maintenance practices in parks, schools, golf courses, and other public property.
- Improve street sweeping methods to increase removal of dirt, sand, leaves, oil, and litter.
- Treat stormwater runoff from streets within the watershed.
- Improve maintenance of detention ponds.
- Continue to incorporate water quality improvements into CIP projects such as detention ponds and wetlands.

Research

- Strengthen the research program to study other locations on the creek.
- Identify the sources of elevated fecal coliform levels, and develop a program to prevent pollutants from entering surface water.
- Identify the sources of elevated temperature and low dissolved oxygen, and develop a program to improve conditions for fish.